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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,614	07/25/2001	Takeshi Kouno	520.40206X00	3460

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EXAMINER

GRAY, MICHAEL KUHN

ART UNIT	PAPER NUMBER
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3746

DATE MAILED: 04/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/911,614

Applicant(s)

KOUNO ET AL.

Examiner

Michael K. GRAY

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 5-11 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 5-11 and 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 13.
- 4) ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. 14.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: Drawings Figures 13-16.

## **DETAILED ACTION**

### **Background**

On March 16, 2004, the examiner and attorney Alan Schiavelli engaged in a telephonic interview during which claim 5 was discussed and possible ways of amending the claim to distinguish the invention from the applied Lorson reference. Subsequent to the discussion the reference of Terwilliger et al. came to the examiner's attention. The Terwilliger et al. reference has made moot previous discussion concerning possible amendments to claim 5 and has been applied to the claims as they appeared in the Amendment received February 3, 2004.

Claims 5-11 and 15-17 remain pending, claims 1-4 and 12-14 having been cancelled.

### **Drawings**

The amended drawings filed on February 3, 2004 have been approved with the exception that the screw depicted in Figures 13-16 should be designated with the reference numeral "6s" as is indicated with the attachment hereto. The other drawing changes submitted February 3, 2004 have been approved. Formal drawings incorporating the changes will be required upon allowance of the case.

### **Claim Objections**

The use of the term "spherical portion" in claim 16 is objected to as not being an accurate description of the claimed invention. Reference to the drawings would indicate that the top of the discharge valve would have a more circular shape than spherical.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 5-9, 15 and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Terwilliger et al. (5,080,130).

Terwilliger et al. teach a compressor having a compression chamber 28 which is formed by a piston 30 and a cylinder. An end plate 16, 14 blocks an opening of the cylinder. The end plate includes a discharge port through which working fluid flows out from the compression chamber between the sides of the valve seat portion 24. The valve seat portion has a tapered surface so that a cross-sectional area of the discharge port increases in a direction away from the compression chamber. The valve has a projection portion having a tapered surface which is accommodated by the tapered surface of the valve seat, i.e., at least a portion of the tapered surface of the valve is in contact with the tapered surface of the valve seat portion when the valve is in a closed position. The tapered portion of the valve seat has a conical shape. The valve has a flat surface portion (Figure 1) provided at an end portion of the valve on the side of the compression chamber. A bore 26 is provided in the end plate 14, 16 and the bore connects to the valve seat portion. The bore and valve seat portion are coaxial.

A retainer 20, 22 is inserted into the bore for holding the valve opposed to the valve seat portion. The discharge port has a cylindrical portion provided between the compression chamber and the discharge port with the valve seat portion.

A biasing means or spring 22 supports the valve so that the valve 18 is biased toward the closed position in contact with the tapered surface of the valve seat portion, but the valve can be forced out of contact with the tapered surface of the valve seat by pressure from within the compression chamber. In that the spring is a coiled-type spring, it has holes or openings through which fluid can move so to circulate through and be discharged from the discharge chamber. The spring acts as both a biasing means and a retaining element. When the discharge valve 18 is open a passage exists between the tapered side 19 of the valve and the valve seat 24 so that the open passage is geometrically positioned between the retainer and inner side surface of the bore for conducting working fluid therethrough.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Terwilliger et al.

Terwilliger et al. substantially teach the invention claimed in claims 10 and 11, but do not teach a conically shaped spring as claimed in claim 10 and do not teach a leaf spring as claimed in claim 11.

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As for claim 10, Terwilliger et al. teach a coiled spring 22 (Figure 1), but the spring is not conical in shape. In that much surface area for accommodating a spring exists on the top planar surface of the valve 18, it would have been obvious to those of ordinary skill in the art to employ a conically-shaped coil spring to provide for a secure connection with the top surface of the valve.

As for claim 11, it would have been a matter of obvious design choice for one of ordinary skill in the art to employ a leaf spring as a biasing means. Applicants have not demonstrated any particular advantage of utilizing a leaf spring as opposed to other types of springs, e.g., a coiled spring.

As for claim 16, column 6, lines 4-5 of Terwilliger et al. indicate the discharge valve and port or valve seat can be radiused or curved. Accordingly, it would have been obvious to one of ordinary skill in the art given such teaching that part of the valve could be curved and the upper part of the valve rounded or spherical.

### **References**

The following reference is of relevance to applicants' disclosure.

King (4,445,534) discloses a valve assembly.

### **Communication**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Gray whose telephone number is (703) 308-6196.

If the examiner does not answer the phone, a message will be provided as to when he will be in the Office. A message may be left on the examiner's voice mail.

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The examiner's supervisor Justine Yu can be reached at (703) 308-2675.

The Official Fax number is (703) 872-9306.

Any inquiry of a general nature should be directed to the receptionist whose telephone number is (703) 308-0861.

**/Michael K. Gray** <sup>mks</sup>,  
**Patent Examiner**  
**Art Unit 3746**

*JY*  
JUSTINE R. YU  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 3700

4/14/04